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**What is claimed is:**

1. A method of treating a subject with a disease characterized by the  
5 production of mucin, comprising administering to the subject an effective amount of a  
composition comprising at least one compound that decreases mucin synthesis or levels in  
the subject.
2. A method of claim 1, wherein the mucin synthesis is chloride channel  
10 dependent.
3. A method of claim 2, wherein the compound decreases mucin synthesis in  
cells that express an ICACC chloride channel.
4. A method of claim 1, wherein the compound is selected from a group  
15 consisting of analogues and derivatives of anthranilic acid, analogues and derivatives of 2-  
amino-nicotinic acid, analogues and derivatives of 2-amino-phenylacetic acid,  
bendroflumethiazide, analogues and derivatives of aminoquinolines, salts thereof and  
prodrugs thereof.
- 20 5. A method of claim 4, wherein the compound is selected from the group  
consisting of talniflumate, flufenamic acid, niflumic acid, mefenamic acid,  
bendroflumethiazide, N-(3-fluorobenzyl)-3-aminoquinoline, salts thereof, derivatives  
thereof and prodrugs thereof.
- 25 6. A method of claim 5, wherein the composition comprises talniflumate, a  
talniflumate derivative, a salt thereof or a prodrug thereof.
7. A method of claim 4, wherein the composition is administered by  
30 inhalation.

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8. A method of claim 7, wherein the composition is in the form of a liquid.
9. A method of claim 7, wherein the composition is in the form of a powder.
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10. A method of claim 8, wherein the liquid is aerosolized.
11. A method of claim 1, wherein the composition further comprises at least one expectorant, mucolytic agent, antibiotic or decongestant agent.
12. A method of claim 11, wherein the expectorant is guaifenesin.
13. A method of claim 1, wherein the composition further comprises at least one stabilizing agent, absorption-enhancing agent or flavoring agent.
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14. A method of claim 13, wherein the stabilizing agent is cyclodextran.
15. A method of claim 13, wherein the absorption-enhancing agent is chitosan.
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16. A method of any one of claims 1-15, wherein the disease is selected from the group consisting of a chronic obstructive pulmonary disease (COPD), an inflammatory lung disease, cystic fibrosis and an acute or chronic infectious disease.
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17. A method of claim 16, wherein the composition is administered via inhalation.
18. A method of claim 17, wherein the composition is administered via inhalation to the lungs or nasal passages.

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19. A method of claim 16, wherein the COPD is selected from the group consisting of emphysema, chronic bronchitis and asthma.

20. A therapeutic composition formulated for inhalation delivery to the lungs,  
5 comprising an amount effective to decrease mucin production or levels of at least one compound selected from the group consisting of talniflumate, flufenamic acid, niflumic acid, mefenamic acid, N-(3-fluorobenzyl)-3-aminoquinoline, salts thereof, derivatives thereof and prodrugs thereof.

10 21. A therapeutic composition of claim 20, wherein the composition comprises talniflumate, a talniflumate derivative, a salt thereof or a prodrug thereof.

22. A therapeutic composition of claim 20, wherein the composition is in the form of a liquid.

15 23. A therapeutic composition of claim 20, wherein the composition is in the form of a powder.

24. A therapeutic composition of claim 20, wherein the composition further  
20 comprises at least one expectorant, mucolytic agent, antibiotic or decongestant agent.

25. A therapeutic composition of claim 24, wherein the expectorant is guaifenesin.

25 26. A therapeutic composition of claim 20, wherein the composition further comprises at least one stabilizing agent, absorption-enhancing agent or flavoring agent.

27. A therapeutic composition of claim 26, wherein the stabilizing agent is cyclodextran.

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28. A therapeutic composition of claim 26, wherein the absorption-enhancing agent is chitosan.

29. An inhalation device comprising a therapeutic composition of any one of  
5 claims 20-28.

30. A method of claim 5, wherein the compound is talniflumate.

31. A method of claim 5, wherein the compound is selected from a group  
10 consisting of N-(3-fluorobenzyl)-3-aminoquinoline, salts thereof, derivatives thereof and prodrugs thereof.

32. A method of 4, wherein the compound is administered orally.

33. A method of claim 30, wherein the composition is administered orally.  
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34. A method of treating a subject with a disease characterized by the production of mucin, comprising administering to the subject an effective amount of a composition comprising at least one compound that decreases mucin synthesis or levels in  
20 the subject and inhibits a cyclooxygenase enzyme.

35. A method of claim 34, wherein the compound specifically inhibits cyclooxygenase 2.

36. A method according to claim 34, wherein the compound is selected from a group consisting of analogues and derivatives of anthranilic acid, analogues and derivatives of 2-amino-nicotinic acid, analogues and derivatives of 2-amino-phenylacetic acid, bendroflumethiazide, analogues and derivatives of aminoquinolines, salts thereof and prodrugs thereof.  
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37. A method of claim 34, wherein the compound is selected from the group consisting of talniflumate, flufenamic acid, niflumic acid, mefenamic acid, bendroflumethiazide, N-(3-fluorobenzyl)-3-aminoquinoline, salts thereof, derivatives thereof and prodrugs thereof.

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38. A method of claim 34, wherein the composition comprises talniflumate, a talniflumate derivative, a salt thereof or a prodrug thereof.

39. A method of claim 34, wherein the composition comprises N-(3-  
10 fluorobenzyl)-3-aminoquinoline, salts thereof, derivatives thereof and prodrugs thereof.

40. A method of claim 34, wherein the composition is formulated for inhalation delivery to the lung.

15 41. A method of claim 34, wherein the composition is formulated for oral delivery.